A System Approach to Concord Productivity and Fruit Quality in the Lake Erie Production Region (Plant Protection Objective: Implementing Grape Forecast Models)

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Abstract
Research-based IPM practices have been developed and modeled for grape pests on the Network for Environment and Weather Applications (NEWA) website. The purpose of this project was to determine if adoption of cost-effective, research-based IPM practices could be increased through a daily email (eNEWA alert) and education of the resources available on NEWA. Forty-seven participants took part in the beta testing of an eNEWA-grape alert. An end of season survey found that 88% of respondents found the eNEWA-grape alert to be above average in usefulness overall with over 90% finding it to be great or above average in the implementation of their vineyard IPM strategy.

Background and Justification:

Grape production in the Lake Erie grape region, and across New York State, is at risk each season from insects and diseases, whose severity is dependent on the current season's weather conditions. This results in growers needing to modify their vineyard IPM strategy on a yearly, monthly, and sometimes daily basis. Research-based IPM practices have been developed and modeled for grape pests on the Network for Environment and Weather Applications (NEWA) website. The purpose of this project was to determine if adoption of cost-effective, research-based IPM practices could be increased through eNEWA-grape alerts and education of the resources available on NEWA.

Objectives:

1) Beta test eNEWA-grape alerts as a method of extending weather and pest model information available on NEWA.

2) Provide training on the resources available on NEWA and how this information can be implemented with a vineyard IPM strategy.

Procedures:

Objective 1: An eNEWA-grape alert was developed using a template provided by Juliet Carroll of an eNEWA alert used for apple production in a previous project. Working with Keith Eggleston of the Northeast Climate Center, an eNEWA-grape alert was developed that would provide participants with current weather and pest model information found on NEWA on a daily basis. This daily email contained 1) high, low and average temperatures, rainfall, wind speed and relative humidity 2) the 5-day forecast for these weather parameters, 3) Growing Degree Day (GDD) totals (Base 50F), 4) 5-day GDD (Base 50F) forecast and 5) model results for powdery mildew, black rot, Phomopsis and grape berry moth. The weather information was provided for not only the current day, but for the past two days as well.

Objective 2: Opportunities to provide training on accessing and implementing NEWA resources was built into all aspects of educational programming by the Lake Erie Regional Grape Program extension team. Training was planned for anywhere from Coffee Pot meetings to twilight meetings to the annual LERGP Growers' conference.

Results and Discussion:

The eNEWA grape alert was started on April 19 with participants from across the Lake Erie region, as well as the other major grape growing regions of New York State. Forty-seven participants took part in the beta testing in the following regions; Lake Erie NY (27), Finger Lakes (7), Hudson Valley (1), Long Island (10) and University faculty and staff (2). The daily emails continued through the growing season and concluded on September 10 when grape harvest began.

An end of season survey was conducted with 24 of 47 participants completing and returning the survey for a return rate of 51%. Overall, participants were very positive about their experience with the eNEWA-grape alert. When responding to the survey participants could rate their experience as Great (the highest rating), Above average, Average, Below Average or Terrible. Respondents found that eNEWA-grapes overall was useful with 62.5% giving it a great rating while 25% found it above average. One participant commented that the total rain fall and wind forecasts were the most helpful in their spray program.

When asked if eNEWA-grape was helpful to their IPM Practices, just over 90% of responses gave it a great (50%) or above average (42%) rating. These types of ratings continued for the question on whether the disease model information contained in eNEWA-grapes was easy to understand with over 90% giving it a great or above average rating. One respondent reported that they based their sprays on the information and had good results with it. The grape berry moth model information found in the eNEWA-grape alert had the most comments and suggestions on needed improvements but still had 87% of respondents giving it a great (52%) or above average (35%) rating. Comments provided by users ranged from "Berry moth is still very hard to pin down" to "I looked at it every day, followed the guidelines, sprayed accordingly and had no grape berry moth".

From survey input and conversations with growers throughout the season, it appears that eNEWA-grapes is another tool that growers can use to assist them in the implementation of their vineyard IPM strategy. Some participants followed up with their local grape extension specialist on how best to use the information while others used it as a trigger to visit the NEWA website to get information from additional sites or for information on the potential for downy mildew infections. While a downy mildew model has been developed, and is displayed on NEWA, it requires too much user input to be made available through a daily email specific to individual station locations.

It is interesting that while the overall reaction of users was positive, when asked if they would be willing to pay a $5/month subscription fee for the eNEWA-grape alert email service, only 36% responded yes. Comments such as "Small price to pay for valuable information" to "If you can just pay for the months you want" to "not sure, $60 is pretty high for an email service".

Grower training on the implementation of NEWA resources was conducted at the Lake Erie Regional Grape Program Growers Conference (110 participants), small grower meetings in the Lake Erie region specific to NEWA (9 participants), at 17 Coffee Pot meetings held across the Lake Erie grape belt during the growing season (227 participants) and at two twilight meetings in the Lake Erie region (310 participants).

Grower training on the implementation of NEWA resources was also conducted at the Long Island Ag Forum in both the general (225) and viticulture (49) sessions.

Project Locations:

The eNEWA-grape alert portion of the project was available to growers in all counties of NYS but was concentrated in Lake Erie Region (Chautauqua, Cattaraugus, Erie and Niagara), Finger Lakes (Schuyler, Seneca, Steuben, Ontario, Wayne and Yates), Long Island (Suffolk) and the Hudson Valley (Dutchess).

Samples of resources developed:

Participants had the opportunity to provide any additional comments and provided some good constructive criticism on how to improve the disease and grape berry moth models along with some very positive comments.

- "Overall, I think it was a good program. I found the delivery of information to be timely and the content helped me with my management decisions. I liked that it came to my email and the information was already compiled for me."
- "NEWA is a great source of information, it gives you a great road map to follow and still allows you to make your own decision based on the information".
- "Very useful we hope it can continue".